

WHAT IS CLAIMED IS:

1. An apparatus for controlling a neutron beam,
comprising a plurality of columnar prisms (1) that are made
5 of a material having a refractive index of less than 1 for a
neutron beam, and are arranged so as to be multi-layered.

2. An apparatus for controlling a neutron beam
according to claim 1, wherein the columnar prisms 1 each
10 have an approximately right-triangle-shaped section, and are
three-dimensionally multi-layered such that respective
surfaces (1a, 1b, 1c) of the columnar prisms are in parallel
to one another.

15 3. An apparatus for controlling a neutron beam
according to claim 2, wherein oblique surfaces of the multi-
layered columnar prisms are in parallel to one another, and
face in the same direction so as to approximately form a
triangular prism as a whole.

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4. An apparatus for controlling a neutron beam
according to claim 3, comprising a plurality of said
triangular prisms arranged such that oblique surfaces
respectively constituting the triangular prism cross each
25 other.

5. An apparatus for controlling a neutron beam according to claim 1, wherein the columnar prisms 1 each have an approximately right-triangle-shaped section,

the apparatus for controlling the neutron beam
5 comprises a plurality of horizontal prism plates (3) each of which includes the columnar prisms horizontally arranged such that respective surfaces (1a, 1b, 1c) of the columnar prisms are in parallel to one another, and

the plurality of horizontal prism plates are
10 vertically multi-layered so as to be horizontally turned alternately by 90 degrees.

6. An apparatus for controlling a neutron beam according to any one of claims 1 to 5, comprising a
15 positioning member that sets the plurality of columnar prisms at predetermined positions, respectively.

7. A method for manufacturing a neutron beam controlling apparatus, comprising:

20 forming a plurality of columnar prisms that are made of a material having a refractive index of less than 1 for a neutron beam, and each have an approximately right-triangle-shaped section; and

three-dimensionally multi-layering the plurality of
25 columnar prisms such that respective surfaces of the columnar prisms are in parallel to one another.

8. A method for manufacturing a neutron beam
controlling apparatus according to claim 7, wherein the
forming of the plurality of columnar prisms is performed by
5 any of molding, extruding, cutting, grinding, whetting or
any combination thereof.

9. A method for manufacturing a neutron beam
controlling apparatus according to claim 7, wherein forming
10 the plurality of prisms comprising:
making stick-shaped members (5) of said material;
setting the stick-shaped members (5) in a plurality of
grooves formed on a jig (6), the grooves having the same
shape; and
15 flattening upper surfaces of the grooves at the same
time.

10. A method for manufacturing a neutron beam
controlling apparatus according to claim 9, wherein the
20 flattening of the upper surfaces of the grooves is performed
by ELID grinding.

11. A method for manufacturing a neutron beam
controlling apparatus according to claim 9, wherein the
25 flattening of the upper surfaces of the grooves is performed
by a straight grinding wheel, a cup grinding wheel or a lap.